

First description of the female of *Aelurillus cypriotus* Azarkina 2006 (Araneae: Salticidae)

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Abstract — *Aelurillus cypriotus* Azarkina 2006 is known from the holotype male collected in Cyprus without an exact locality. Here we describe the female of this species for the first time, provide new data on species distribution and biology.

Key words — Salticidae, *Aelurillus*, description, Cyprus

Introduction

The genus *Aelurillus* contains 72 species, including two subspecies (World Spider Catalog 2017), most of which are distributed in the Palaearctic region, except for ten species known from outside of its limits (Azarkina & Komnenov 2015). To date, twenty-two species remain known from a single sex: thirteen from the females and nine from the males. Thirty-four species occur in the Mediterranean region (World Spider Catalog 2017). *Aelurillus cypriotus* Azarkina 2006 was described from Cyprus by using only the male holotype and without an exact locality (Azarkina 2006). The main goals of this paper are to provide a description of the female for the first time, new data on the morphology (measurement range and habitus' photos), biology of this species, a distribution map for *A. cypriotus*.

Material and methods

A total 49 specimens were examined in ethanol and their colours refer to those of the preserved specimens. All drawings were made with the aid of a reticular eyepiece attached to a MBS-9 and MBS-10 stereomicroscope. The epigynes were detached and macerated in 20% KOH solution for a night. Photographs were taken using an Olympus SZX16 stereomicroscope with an Olympus E-520 camera and Zeiss Stemi 2000 with a Canon EOS 600D camera. Focal planes of single image stacks were combined using the CombineZP software in the Zoological Museum of the University of Turku, Finland and Helicon Focus 6.3 software in the Insti-

tute of Systematics and Ecology of Animals, Russia. Photos of living specimens were taken with a Nikon D750 camera. All drawings were edited and assembled in Adobe Photoshop CS5. A distribution map was prepared by using the online mapping software SimpleMappr (Shorthouse 2010).

Abbreviations used in this paper are as follows: AME—anterior median eyes, AMNH—American Museum of Natural History (L. Prendini), ALE—anterior lateral eyes, CD—copulatory ducts, EO—embolic division, EP—epigynal pocket, EW—epigynal wings, FD—fertilisation ducts, Fm—femur, ID—insemination ducts, ISEA – Institute of Systematics and Ecology of Animals SB RAS, Siberian Zoological Museum (G. Azarkina); Mt—metatarsus, PCJvK—Personal collection of J. van Keer (Kappelle-op-den-Bos, Belgium), PCARS—Personal collection of A. Russell-Smith (Sittingbourn, UK), PLE—posterior lateral eyes, Pt—patella, R—receptaculæ, Tb—tibia, TK—tegular knob. The term “face” is used to describe the entire frontal part of the carapace (as seen from in front). All measurements are in mm. For the leg spination the system adopted is that used by Ono (1988).

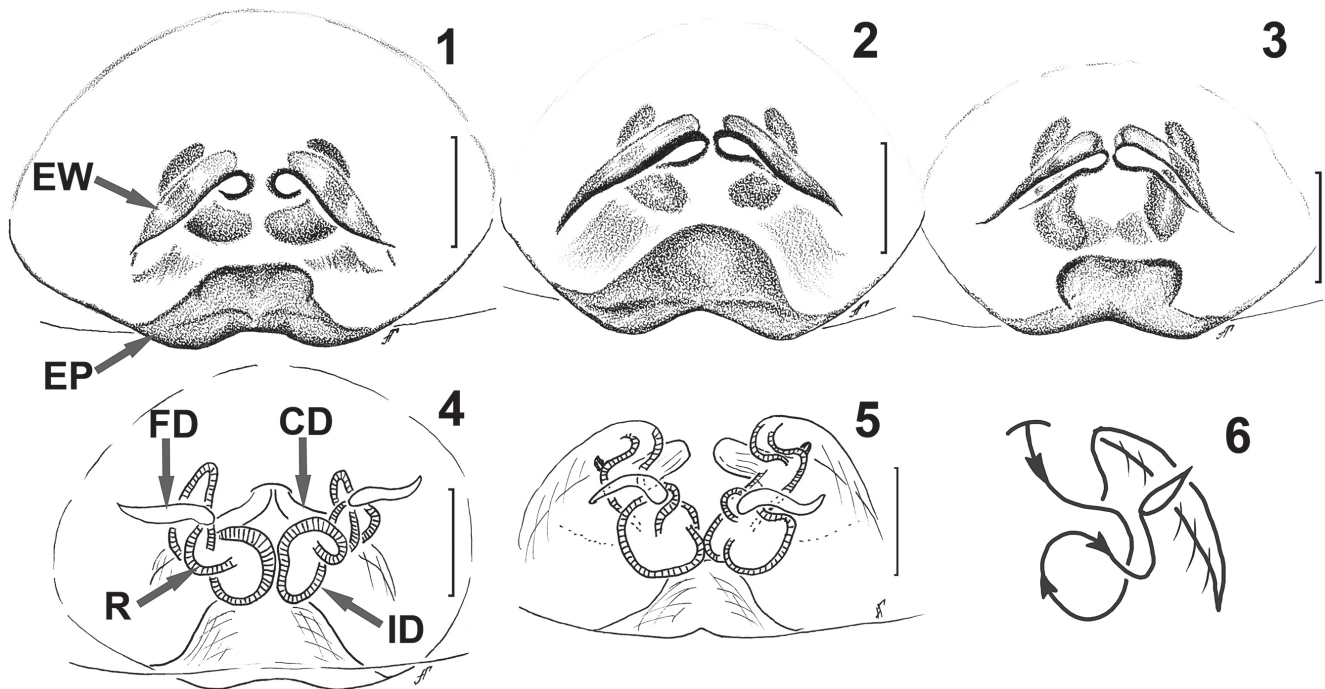
Taxonomy

Aelurillus Simon 1884

Aelurillus cypriotus Azarkina 2006

Figs. 1–12, 15–25

Aelurillus cypriotus Azarkina 2006: 68, f. 28–36 (♂), male holotype (AMNH, examined).



Figs. 1–6. *Aelurillus cypriotus*. 1–3, epigynes, ventral view (1, PCJvK, #2679; 2, PCJvK, #2679; 3, PCJvK, #2973); 4–5, vulva, dorsal view (4, PCJvK, #2679; 5, PCARS); 6, scheme of insemination duct. Scales = 0.1 mm.

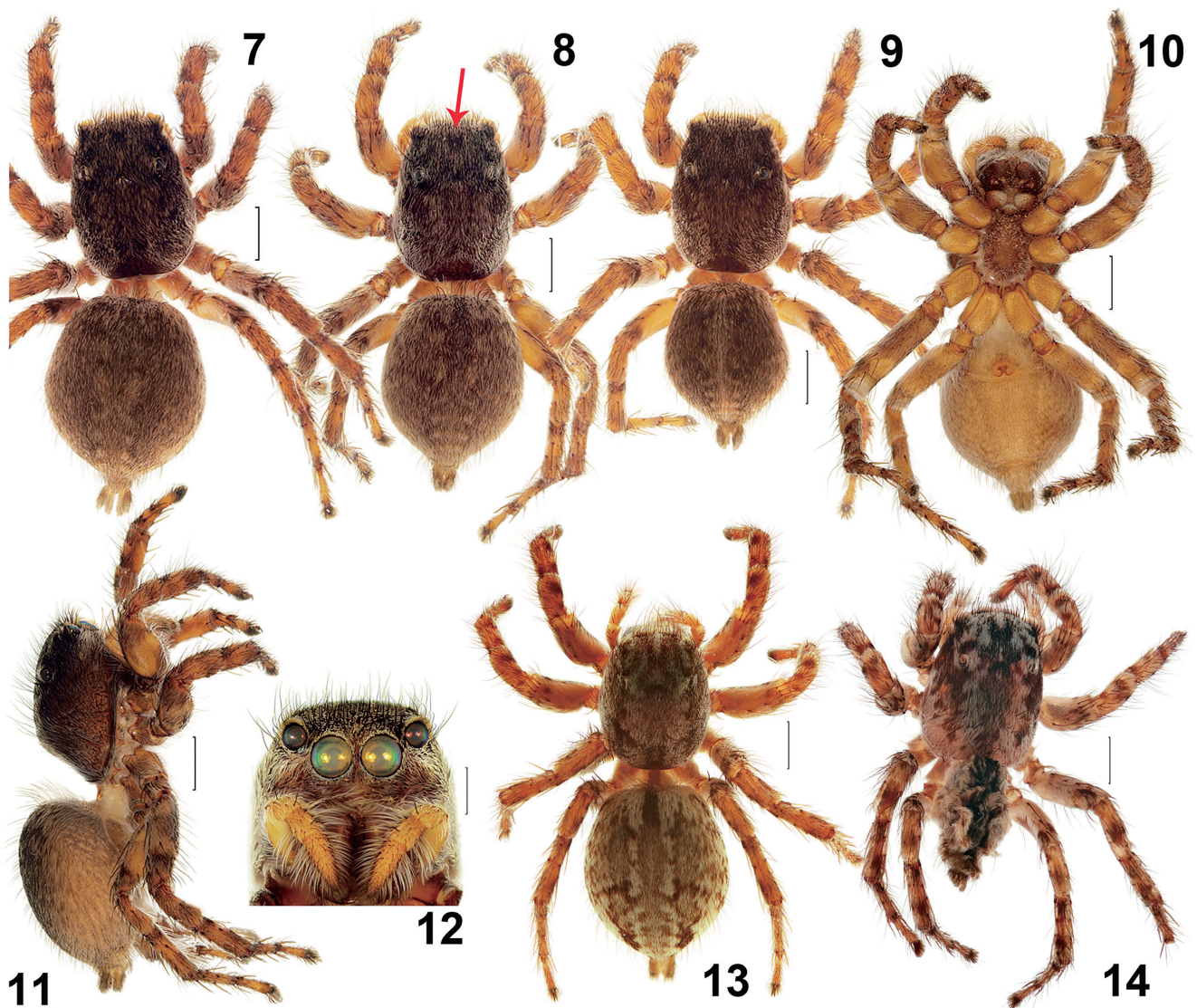
Material examined. **CYPRUS:** Holotype (AMNH) 27–29.04.1982 (A. Stubbs); 1♂ (PCJvK, #2976) Paphos, Kinoussa, c. 35°01'N, 32°30'E, slope with stones in *Pinus* forest, 1.05.2010 (J. van Keer); 1♀ (PCJvK, #2973) Paphos, Akamas Peninsula, Kioni Point, c. 35°03'N, 32°16'E, stones in very dry maguis, 30.04.2010 (J. van Keer); 1♂ 2♀ (PCJvK, #3042) Limassol, Trooditissa, c. 34°54'N, 32°50'E, stones along riverbed, 21.05.2011 (J. van Keer); 2♂ 3♀ (PCJvK, #2679) Limassol, Mt. Olympus, near Ski resort, c. 34°56'N, 32°51'E, in *Pinus nigra* forest, stone field, all specimens found together sunning in stones, 3.05.2007 (J. van Keer); 6♂ 4♀ (PCJvK, #2679) same, 5.05.2007 (J. van Keer); 1♀ (PCARS) Paphos, Pano Arkhimandrita, road, c. 34°45'N, 32°40'E, 20.04.1995 (A. Russell-Smith); 1♂ (PCARS) Limassol, Foini, Pano Platres, c. 34°53'N, 32°50'E, on stones, dried out stream, nr Caledonia, 26.04.2007 (A. Russell-Smith); 2♂ 2♀ (ISEA, #001.7970) Cyprus, Nicosia District, Troodos Mt., road from Pedoulas to Lemithou, 34°58'N, 32°48'E, mixed forest of *Pinus brutia* (Turkish pine), *Pinus nigra* (Black pine) and *Quercus alnifolia* (Golden oak), 1120 m a.s.l., 15.04.2017 (C. Zoumides, M. Hadjiconstantis).

Comparative material. *Aelurillus leipoldae*: 10♂ 2♀ (ISEA, 001.4045, 001.4047, 001.4058) Greece, Crete, Chania Prefecture, Lefka Ori Mts., c. 35°17'N, 24°02'E, 800 m a.s.l., 23.11.1990, 6.07.–6.11.1991 (P. Lymberakis); 2♀ (ISEA, 001.4057) Greece, Gavdos Island, Lavrakas sand-dunes, 34°52'N, 24°04'E, *Juniper* forest, 24.04.–8.11.1997 (K. Paragiaman).

Aelurillus m-nigrum: 3♀ (ISEA, 001.6266) Azerbaijan, Apsheron Peninsula, Zyk [Zıg], c. 40°22'N, 49°58'E, 8.04.1979 (P.M. Dunin); 2♂ (ISEA, 001.6262) Kazakhstan, Pavlodar Area, May District, south of Bestau, c. 51°18'N, 76°52'E, hilly steppe, 26.08.1990 (O.V. Lyakhov).

Aelurillus nenilini: Holotype ♂ (ISEA, 000.692) Turkmenistan, Lebap Velayat, Amudar'ya Nature Reserve, Kabakly [=Gabakly], c. 39°46'N, 62°32'E, 28.03.1982 (Collector unknown). Paratypes: 1♂ (ISEA, 000.693) same with Holotype, 1♂ (ISEA, 000.694) Uzbekistan, Uchkuduk Distr., Bakantau Mts, Irlir, Karakuduk well, c. 42°32'N, 63°24'E, 9.05.1976 (A.P. Kononenko). 1♂ (ISEA, 001.4056) Turkmenistan, Lebap Velayat, Amudar'ya Nature Reserve, Nargyz [=Narkyz] Island, c. 39°38'N, 62°51'E, tugai (riparian woodland), 13.04.1983 (S.K. Alekseev).

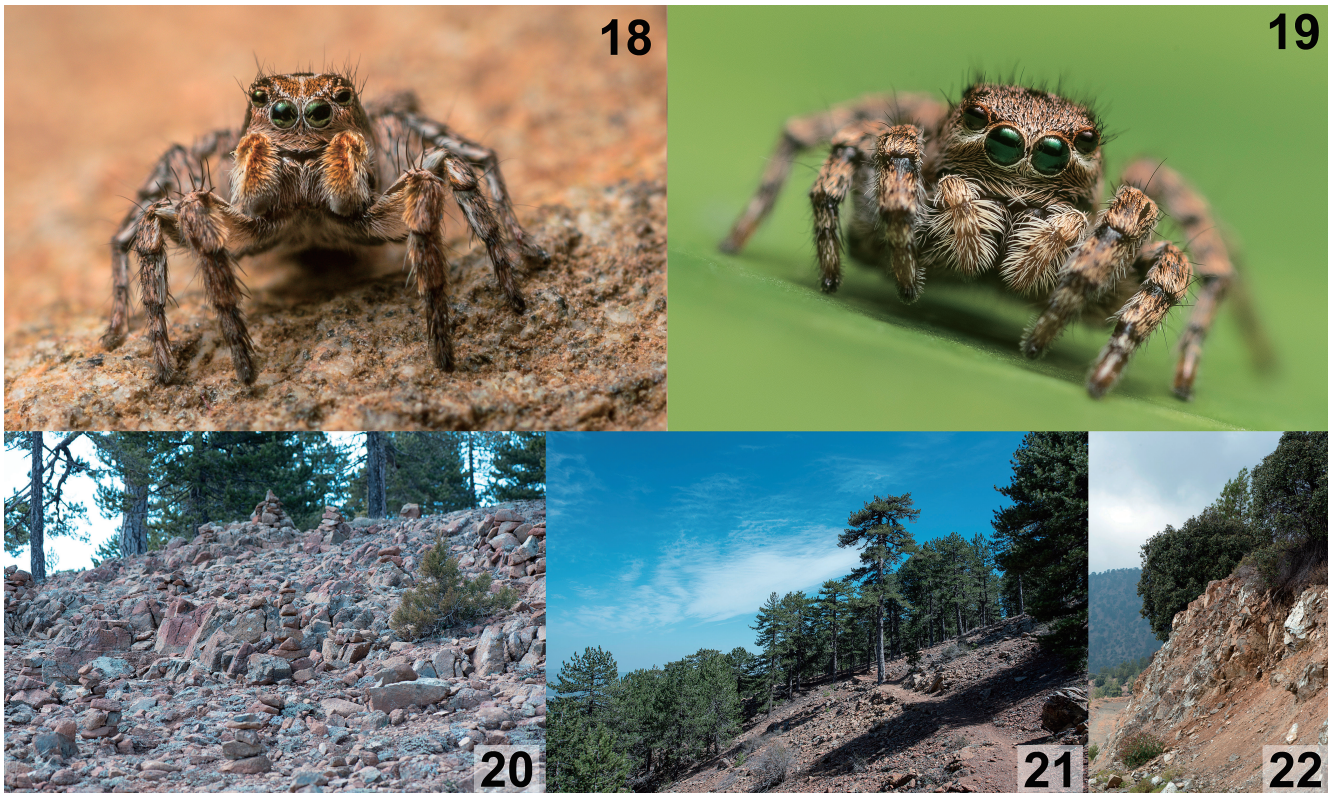
Diagnosis. Females of *A. cypriotus* are close to those of *A. leipoldae* (Metzner 1999) and *A. m-nigrum* Kulczyński 1891, but differ from these species in habitus colouration – colouration in *A. cypriotus* is less variegated, with a small dark brown median patch with a very short white median stripe behind AME (Figs. 7–9, arrow in Fig. 8), while *A. leipoldae* and *A. m-nigrum* have a thin long white stripe at this position, especially longer in *A. m-nigrum* (Figs. 13–14); also differs in the conformation of epigyne and spermathecae: viz., *A. cypriotus* has broad EP (Figs. 1–3) and simple structure of the spermathecae (Figs. 4–5), while *A. leipoldae* (cf. figs. 39–40, 42 in Azarkina 2002; figs. 32–34 in Azarkina & Komnenov 2015) and *A. m-nigrum* (cf. figs. 78–80 in Azarkina 2002) have narrow EP and more compli-



Figs. 7–14. *Aelurillus* spp. 7–9, female habitus of *A. cypriotus*, dorsal view; 10, ditto, ventral view; 11, ditto, lateral view; 12, female “face”; 13, female habitus of *A. m-nigrum*; 14, female habitus of *A. leipoldae*. Scales = 1 mm (7–11, 13–14), 0.5 mm (12).



Figs. 15–17. *Aelurillus cypriotus*. 15, male “face”; 16, male habitus, lateral view; 17, ditto, ventral view. Scales = 1 mm.



Figs. 18–19. *Aelurillus cypriotus*. 18, male habitus, frontal view; 19, female habitus, frontal-lateral view. **Figs. 20–22.** Habitats of *A. cypriotus*.

cated structure of the spermathecae.

Males of *A. cypriotus* are close to those of *A. leipoldae* (Metzner 1999), *A. m-nigrum* Kulczyński 1891 and *A. nenilini* Azarkina 2002. The male has habitus colouration similar to that of *Aelurillus nenilini* Azarkina 2002 – the two species share carapace and “face” colouration (Figs. 24–25 and 30–31), but *A. cypriotus* differs from *A. nenilini* in presence of a broad white stripe running longitudinally on the dorsum of abdomen (Fig. 24), which is absent in *A. nenilini* (Fig. 30). *Aelurillus cypriotus* has abdomen colouration similar to those of *A. leipoldae* (Fig. 26) and *A. m-nigrum* (Fig. 28), but the latter species have dark brown shine ocular area without a pattern and white long dense hairs on clypeus (Figs. 27, 29), while *A. cypriotus* has a pattern on ocular area and relatively short sparse white hairs on clypeus (Fig. 25). *Aelurillus cypriotus* has bulbus shape similar to that of *A. m-nigrum* without tegular knob at basal half of tegulum (Azarkina 2006: figs 29–30 and Azarkina 2002: figs. 73–74), while *A. leipoldae* and *A. nenilini* have tegulum with tegular knob (Azarkina 2002: figs. 33–34, 37–38 and figs. 82–83). *Aelurillus cypriotus* differs from these species in the shape of dorsal tibial apophysis – slightly bent dorsally in *A. cypriotus* and pointed straight in the other three species (Azarkina 2006: fig. 30 and Azarkina 2002: figs. 34 & 38 for *A. leipoldae*, fig. 74 for *A. m-nigrum* and fig. 83 for *A. nenilini*). Also *A. cypriotus* differs from these 3 species in the shape of embolic division – round EO and “folded”

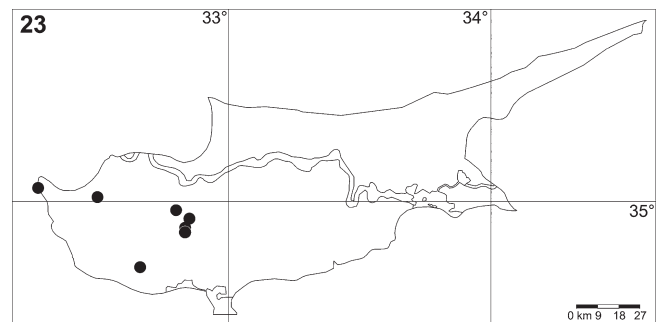


Fig. 23. Distributional records of *Aelurillus cypriotus* in Cyprus.

simple tip of conductor in *A. cypriotus* (Azarkina 2006: figs. 34 & 36), while oval EO and curved tip of conductor with small membrane on the top in *A. leipoldae* (Azarkina 2002: figs. 35–36), *A. m-nigrum* (Azarkina 2002: figs. 76–77) and *A. nenilini* (Azarkina 2002: figs. 84–85).

Description. Males (holotype, and two males from Troodos Mt.; holotype is the smallest among them; length of leg segments and leg spination are based on the bigger male from Troodos Mt.): Carapace 1.90–2.60 long, 1.50–1.90 wide, 1.00–1.20 high at PLE. Ocular area 0.90–1.10 long, 1.20–1.40 wide anteriorly and 1.20–1.40 wide posteriorly. Diameter of AME 0.35–0.45. Abdomen 1.60–2.00 long, 1.30–1.90 wide. Cheliceral length 0.70. Clypeal height



Figs. 24–31. *Aelurillus* spp. 24–25, *Aelurillus cypriotus*; 26–27, *A. leipoldae*; 28–29, *A. m-nigrum*; 30–31, *A. nenilini*. 24, 26, 28, 30, male habitus, dorsal view; 25, 27, 29, 31, ditto, frontal-lateral view. Scales = 1 mm.

0.15–0.20. Length of leg segments: I $1.20 + 0.70 + 0.80 + 0.60 + 0.50$; II $1.20 + 0.80 + 0.75 + 0.60 + 0.50$; III $1.80 + 0.80 + 0.90 + 0.95 + 0.55$; IV $1.50 + 0.70 + 0.90 + 1.10 + 0.60$. Leg spination: I: Fm d 0–1–1–4; Tb pr 1–2, v 1–1–2 ap; Mt pr and rt 1–1 ap, v 2–2 ap. II: Fm d 0–1–2–5; Tb pr 1–1, v 1–1–2 ap; Mt pr and rt 1–1 ap, v 2–2 ap. III: Fm d 1–0–2–4; Pt pr and rt 1; Tb d 1–0–0, pr and rt 1–1–1, v 0–1–2 ap; Mt d 1–1–0, pr and rt 1–0–2 ap, v 0–2–2 ap. IV: Fm d 0–1–1–3; Pt pr and rt 1; Tb d 1–0–0, pr 1–1–1, rt 1–1–1–1, v 1–0–2 ap; Mt d 1–1–0, pr 1–1–2 ap, rt 1–0–2 ap, v 1–1–2 ap. Coloration. See in Azarkina (2006).

Females (seven females from Mt. Olympus; length of leg segments and leg spination are based on one of them): Carapace 2.60–2.80 long, 2.15–2.45 wide, 1.50–1.70 high at PLE. Ocular area 1.10–1.30 long, 1.50–1.55 wide anteriorly and 1.55–1.60 wide posteriorly. Diameter of AME 0.45–0.50. Abdomen 2.80–3.00 long, 2.65–2.80 wide. Cheliceral length 0.90. Clypeal height 0.25–0.30. Length of leg segments: I $1.40 + 0.90 + 0.80 + 0.60 + 0.50$; II $1.40 + 0.80 + 0.80 + 0.60 + 0.50$; III $2.00 + 1.10 + 1.20 + 1.20 + 0.75$; IV $1.90 + 0.90 + 1.15 + 1.30 + 0.75$. Leg spination: I: Fm d 0–1–1–4; Tb pr 1–2, v 1–1–2 ap; Mt pr and rt 1–1 ap, v

2–2 ap. II: Fm d 0–1–2–5; Tb pr 1–1, v 1–1–2 ap; Mt pr and rt 1–1 ap, v 2–2 ap. III: Fm d 1–0–2–4; Pt pr and rt 1; Tb d 1–0–0, pr and rt 1–1–1, v 0–1–2 ap; Mt d 1–1–0, pr and rt 1–0–2 ap, v 0–2–2 ap. IV: Fm d 0–1–1–3; Pt pr and rt 1; Tb d 1–0–0, pr 1–1–1, rt 1–1–1–1, v 1–0–2 ap; Mt d 1–1–0, pr 1–1–2 ap, rt 1–0–2 ap, v 1–1–2 ap. Coloration. Carapace brown, with dark brown or black eye field, covered with white and dark brown scales and long bristles, the first eye row densely fringed with long bristles (Figs. 7–9, 11). Sternum yellow-brown (Fig. 10). Clypeus yellow-brown, covered with sparse white scales, with a row of long brown bristles (Fig. 12). Cheeks yellow-brown, with a white band on each side going from PME to the lateral sides of carapace. Chelicerae brown. Abdomen yellow-brown; dorsum with an unclear pattern (Figs. 7–9). Book-lungs yellow-brown. Spinnerets yellow, covered with dense brown hairs (Fig. 10). All legs yellow-brown, with brown spots and semi-rings. Palps yellow, covered with long white hairs and dark brown bristles. Structure of epigyne and spermathecae as in Figs. 1–5.

Habitats and distribution. *A. cypriotus* is a species endemic to Cyprus (Fig. 23). The holotype was described from Cyprus without the specified locality by Azarkina (2006),

but the possible locality was inferred by the author with a question mark in the center on the island (Azarkina 2006: fig. 37). However, we decided not to include the center of the island as the certain locality as far as we obtain the specimens from central Cyprus. The examined specimens except for the holotype were collected in the western part of the island with altitudinal range from 0 m (Kioni Point) to 1700 m a.s.l. (Mt. Olympus). Pedoulas/Lemithou located at the Troodos Mountains (Nicosia District) at an altitude of 1100 metres, 15 km north-west from Mt. Olympus, i.e. the peak of Troodos Mountains. The site is sparsely forested with a mix consisting of *Pinus brutia* (Turkish pine) and *Pinus nigra ssp. pallasiana* (Black pine), while the understorey is dominated by *Quercus alnifolia* (Golden oak) shrubs. At the openings and at the edges of unpaved roads, the dominant species is *Cistus creticus* (Pink Rock-Rose). The geology of the area is characterised by sheeted dykes and gabbro, typical of the Troodos Ophiolite complex, with shallow and stony soil (Figs. 20–22). The spider individuals used in this study were found on this stony environment amongst low vegetation, at the edge of an unpaved road (Figs. 18–19). The majority of individuals were standing on top of small rocks, observing the surrounding area, probably for a prey or a mate. When approached and their view was shaded, the spiders were keen to jump in a sun-illuminated spot. As other Aelurillini, *A. cypriotus* is a ground-dwelling jumping spider.

Acknowledgements

We thank Johan van Keer (Kapelle-op-den-Bos, Belgium) and Anthony Russell-Smith (Sittingbourne, UK) for providing us with the

Aelurillus material, Seppo Koponen (University of Turku) for providing us to museum facilities, Ilya Smelansky (Novosibirsk, Russia) for helping with coordinates from Kazakhstan, as well as Christodoulos Makris and George Konstantinou for their help during field campaigns in Cyprus. The English of the earlier draft was kindly edited by Dmitri Logunov (Manchester, UK). We also thank Gustavo R.S. Ruiz for his comments and useful suggestions. This work was supported in part (for GA) by the Federal Fundamental Scientific Research Program for 2013–2020 (AAAA-A16-116121410121-7).

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Received November 13, 2017 / Accepted March 7, 2018